UNIVERSITI PUTRA MALAYSIA

CONSUMER DEMAND FOR FRESH MARINE FISH IN PENINSULAR MALAYSIA

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CONSUMER DEMAND FOR FRESH MARINE FISH IN PENINSULAR MALAYSIA

by

Kamaruzzaman Abu Samah

A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in the Faculty of Economics and Management, Universiti Pertanian Malaysia.

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CONSUMER DEMAND FOR FRESH MARINE FISH IN PENINSULAR MALAYSIA

By

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May 1987

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The general objective of the study was to examine the consumer demand for fresh marine fish in Peninsular Malaysia. In particular, the study aimed at evaluating the important factors in determining the demand for fish, estimating elasticity values, as well as projecting the demand up to the year 2000.

Two models were used, a single equation and a simultaneous equation. A single equation model was used in the demand analysis of fish by species and grades, whereas, the demand for total fish was evaluated by the simultaneous equation demand

model. To estimate the empirical models, annual data from the period of 1950 to 1984 was used.

A single equation which was in the form of price dependent model was estimated by using Ordinary Least Squares (OLS) and Cochrane-Orcutt iterative techniques, whereas, the simultaneous model was estimated by Two Stage Least Squares (2SLS).

It was found that the important variables in the single equation model were income per capita, average price index of fish and meat, trend and quantity of fish consumed per capita.

The results suggest that fresh marine fish can be either normal, inferior, substitutes or complementary commodity depending on the specific areas of the study. A similar situation was observed with the own price elasticity of fresh marine fish.

Abstrak untuk tesis yang diserahkan kepada Senet Unversiti Pertanian Malaysia sebagai memenuhi sebahagian daripada keperluan bagi dianugerahkan Ijazah Sarjana Sains.

PERMINTAAN PENGGUNA TERHADAP PENGGUNAAN IKAN LAUT YANG SEGAR DI SEMENANJUNG MALAYSIA

Oleh

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Matlamat penyelidikan ialah untuk menganggar permintaan pengguna terhadap ikan laut yang masih segar di Semenanjung Malaysia dengan mengambil kira Pantai Barat, Timur dan negeri-negeri Selangor, Perak, Kelantan dan Terengganu. Penyelidikan ini juga akan menganalisa faktor-faktor yang menentukan permintaan pengguna, menganggar keanjalan-keanjalan yang berkaitan serta jumlah permintaan hingga ke tahun 2000.

Bagi mencapai matlamat-matlamat tersebut, data sekunder (1950 - 1984) digunakan agar dapat memberi keputusan-keputusan empirikal bagi jangka masa panjang.

Angkubah-angkubah yang digunakan meliputi indek harga ikan segar dan daging, pendapatan serta kuantiti per kapita dan cita rasa pengguna. Indeks harga 1980 digunakan dan ini menghapuskan peranan inflasi yang boleh menggugat keputusan empirikal yang bakal didapati. Dua jenis model digunakan dan model-model ini didalam bentuk persamaan satu fungsi dan persamaan serentak. Persamaan satu fungsi digunakan bagi menganalisa permintaan ikan berdasarkan gred dan jenis ikan, sementara persamaan serentak untuk mengkaji permintaan pengguna terhadap keseluruhan ikan segar di Semenanjung Malaysia.

Bagi model persamaan satu fungsi ialah didalam bentuk harga sebagai angkubah tidak bebas. Teknik OLS dan Cochrane-Orcutt digunakan untuk menguji bagi mendapatkan keputusan-keputusan empirikal, sementara model didalam bentuk persamaan serentak menggunakan teknik 2SLS bagi penyelesaian empirikal.

Keputusan empirikal menunjukkan bahawa ikan segar boleh dianggap sebagai barangan bawahan, biasa atau mewah, juga barangan pengganti dan penggenap mengikut kawasan kajian. Begitu juga halnya dengan keanjalan harga ikan-ikan segar tersebut.

CHAPTER ONE

INTRODUCTION

Contributions of Fisheries in the National Economy.

Fisheries play a significant role in Malaysia's economy as a source of protein, foreign exchange earnings and employment. More than 60 percent (1970-1984) of the edible fish landed are marketed fresh and serves as a complement to rice, the main staple food of the population (Nik Mustapha & Ghaffar, 1985). It is also the cheapest animal protein. The diversity in types, grades and availability in relative abundance in the markets at a broad price range make fish available to all groups of consumers irrespective of their income levels. In the year 1983, the amount of fresh marine fish consumed was 353,471 metric tonnes (Annual Fisheries Statistics, 1983) and 278,643 metric tonnes in the case of meats (FAMA Commodity Bulletin, 1983). In terms of average retail price, grade one fish fetched $6.85 per kilogram,[1] while the average price of meat, its substitute, was $7.80 per kilogram.[2]

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1. Computed from the average price of Silver and Chinese Pomfret (Pampus argentus and Pampus chinensis) and Threadfin Species (Eleutheronema species and Polynemus species)

2. Computed from the average price of beef, mutton, chicken and pork (FAMA Commodity Bulletin, 1985).

Tables 1.1 and 1.2 show meat and fish consumption in Peninsular Malaysia and consumption from animal sources and fish in Malaysia, respectively. Table 1.1 indicates that fish constitutes more than 55 percent of the total protein supply for Peninsular Malaysia. The rise in absolute as well as growth percentage in supply of fish over the 1960 to 1985 period is an indication of the increasing importance of fish as a source of protein. Table 1.2, on the other hand, shows the per- capita consumption per day for fish and meat which further verifies the importance of fish as a source of protein to the population.

A substantial amount of fish and fishery products are traded. Table 1.3 shows the amount of export and import from 1965 to 1983 for fish[1] and fishery products.[2] The net foreign exchange earnings from fishery products during this period was unstable but showed a positive net balance with the exception of 1967. In 1967, fish imported were of high-value species while exports were largely of low-valued species of fish (Tables 1.3, 1.4 and Savariraj, 1981).

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1. Fish by defination includes finfish, molluscs, crustaceans and all other forms of marine animals and plant life other than marine mammals, birds and highly migratory species. However, the above discussion only looks at fish by grades as classified by the International Standard Statistical Classification for Aquatic Animals and Plants (ISSCAAP).

2. Fishery Productsareproducts of fish either by freezing, curing, canning, reduction, fresh or other forms of processing.

TABLE 1.1

TOTAL AND PER CAPITA CONSUMPTION OF MEAT
AND FISH IN PENINSULAR MALAYSIA
(Metric Tonnes)
(1960 - 1985)

	1960	1965	1970	1975	1980	1985 *
Total Meat	76,583	100,910	126,091	148,476	190,420	144,158
Total Fish	131,466	184,022	289,661	376,571	454,445	491,817
Per capita Consumption(kg / capita)						
Animal Meat	10.67	12.29	14.42	16.60	18.04	20.43
Fish	18.31	22.41	29.20	28.70	21.86	25.22

Note : * Projected figures are based on Ghazali Mohayidin & Siti Khairon Sharif, 1984.

(Source: Labon, 1974; Leong, 1976 and Ghazali Mohayidin & Siti Khairon Sharif, 1984).

TABLE 1.2

PER CAPITA CONSUMPTION PER DAY OF FISH AND ANIMAL PROTEIN IN PENINSULAR MALAYSIA
(grams)
(1972-1982)

	Per capita Consumption Per Day			
	1972		1982	
Food	grams	%	grams	%
Fish	8.45	44	24.53	52
Animal Sources	10.92	56	22.51	48
Meat and Poultry	5.77	30	6.74	14
Eggs	2.75	14	3.29	7
Milk	2.40	12	12.48	27

(Source : Nicol, 1976 and Ghazali Mohayidin & Siti Khairon, 1984)

TABLE 1.3

FOREIGN EXCHANGE EARNINGS FROM FISH AND FISHERY PRODUCTS
IN PENINSULAR MALAYSIA
(M $ MILLION)
(1965 - 1983)

	Export Of		Import Of		Net Export From	
Year	Fish	F.Products	Fish	F.Products	Fish	F.Products
1965	28.49	38.14	14.37	35.05	14.12	3.09
1966	36.62	45.74	22.00	44.56	14.62	1.18
1967	31.96	40.98	22.74	45.07	9.22	-4.09
1968	45.16	56.36	23.98	44.25	21.18	12.12
1969	51.41	65.82	18.68	42.28	32.73	23.54
1970	78.98	96.06	60.11	58.08	18.87	37.98
1971	101.46	118.62	33.38	52.40	68.08	66.23
1972	118.15	142.58	29.99	49.69	88.16	92.89
1973	131.39	176.09	32.27	55.49	99.12	120.60
1974	122.37	159.17	40.58	67.63	81.79	91.54
1975	122.06	166.28	43.80	78.60	78.26	87.68
1976	191.61	238.07	47.96	87.51	143.65	150.56
1977	127.16	159.70	47.60	95.24	79.56	64.46
1978	142.47	200.15	48.74	109.77	93.73	90.39
1979	219.03	310.01	55.06	131.24	163.97	178.77
1980	118.43	293.36	49.78	130.22	68.65	113.14
1981	70.78	254.51	35.84	155.38	35.74	99.13
1982	75.35	224.88	83.85	176.77	- 8.50	28.10
1983	104.39	242.81	116.12	205.89	- 11.73	36.92

Note : F.Products is fishery products, excluding fresh marine fish.

(Source : Annual Fisheries Statistics ; Various issues)

TABLE 1.4

FISH TRADE IN PENINSULAR MALAYSIA
(In Metric Tonnes)
(1969 - 1984)

Year	Imports of		Exports of	
	F.M.Fish	F.Products	F.M.Fish	F.Products
1969	23,057	24,080	57,117	91,534
1970	63,583	44,085	77,521	113,781
1971	36,724	38,351	81,073	115,885
1972	43,989	45,873	80,520	123,165
1973	46,396	48,451	82,196	133,001
1974	56,622	59,130	72,684	115,533
1975	67,547	70,538	64,180	100,279
1976	77,410	82,725	73,083	115,701
1977	79,344	81,526	58,431	115,683
1978	87,416	89,786	81,736	131,683
1979	105,400	108,101	82,331	133,222
1980	80,860	82,795	68,387	122,234
1981	88,515	150,501	71,815	130,959
1982	105,582	179,618	65,169	139,300
1983	96,946	N.A	69,007	N.A
1984	N.A	108,739	N.A	70,775

Notes: F.Products - Fishery Products (Excluding Fresh Marine Fish)
F.M.Fish - Fresh Marine Fish
N.A - Not Available

(Source: Annual Fisheries Statistics; Various Issues)

In the case of fresh marine fish, the net export earnings are positive except in the year 1982 onwards when earnings started to decline and became negative in value. The reasons for the decline in the net export earnings were due to the increase in demand, a decline in total per capita production and an increase in the cost of production (Nik Mustapha & Ghaffar, 1985).

The contribution of fisheries towards the National Gross Domestic Product is shown in Table 1.5. In 1983, the Agricultural Sector contributed 22.02 percent ($ 6,922 million) of Gross Domestic Products ($ 31,442) and from this 22.02 percent, fisheries contributed 4.14 percent ($ 1,303 million). External trade earnings contributed 0.12 percent ($ 36.92 million) in terms of fishery products and a negative balance in terms of fresh marine fish.

The Fisheries sector is an important source of employment. In 1983, approximately 76,000 people were employed and this represented 3.92 percent and 1.45 percent contribution to the agricultural labour force and total labour force in the country, respectively (Annual Fishery Statistics, 1983). The contribution of the fishing community (fishermen) towards total labour force and labour force in the agricultural sector is shown in Table 1.6.

TABLE 1.5

CONTRIBUTION OF FRESH MARINE FISH
TOWARDS GROSS DOMESTIC PRODUCTS
IN MALAYSIA
(M$ Million)
(1979 - 1983)

Year	Net Export Earning From FMF	Local Production			Agriculture		G.D.P
		FMF	% Agric	% GDP	$	% GDP	$
1979	164	988	16.28	4.06	6,068	24.95	24,324
1980	69	978	15.64	3.73	6,255	23.85	26,228
1981	36	1,215	18.65	4.33	6,516	23.20	28,092
1982	- 9	1,234	17.64	4.16	6,995	23.57	29,677
1983	- 12	1,303	18.82	4.14	6,922	22.02	31,442

Note : FMF - Fresh Marine Fish and GDP - Gross Domestic Products. Figures for net export earning from FMF is obtained from Table 1.2.

(Source : Annual Fisheries Statistics : Various Issues.
Economic Report : Various Issues).